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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,260	03/01/2002	Tomotaka Koketsu	1055-02	2943

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EXAMINER	
BEFUMO, JENNA LEIGH	

ART UNIT	PAPER NUMBER
1771	

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/070,260	KOKETSU ET AL.	
	Examiner	Art Unit	
	Jenna-Leigh Befumo	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Amendment submitted on May 17, 2005, has been entered. Claims 1 – 7 and 10 have been amended and claims 11 – 14 have been added. Therefore, the pending claims are 1 – 14.

2. The objection to claim 1 is withdrawn since the applicant has corrected the misspelled word.

3. The 35 USC 112 1st paragraph rejection set forth in section 8 of the previous Office Action is withdrawn since the applicant has amended the claims to recite that the fiber shape has rounded edges and can have grooves, as is described in the disclosure.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 2, 4 – 6, and 10 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-252740A (English Translation).

The features of JP 07-252740 A have been set forth in the previous Office Action. The new limitations added to claim 1, i.e., the shape limitations, are shown in Figure 1. Thus, claim 1 is rejected for the reasons of record. Claims 2, 4 – 6 and 10 still have the same limitations and thus are rejected for the reasons of record also. Finally, newly added claims 11 – 14 depend on claim 2 and add the same limitations as recited in claims 4 – 6 and 10. Therefore, claims 11 – 14 are rejected for the same reasons set forth in the previous Office Action.

6. Claims 2, 3, 7 – 9, and 11 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 07-252740A (English Translation).

Claim 3 has been amended to be an independent claim requiring a fabric made with a flattened fiber which is aligned such that the horizontal index (HI), as defined by the disclosure, is at least 0.75. This feature measures the alignment of the flattened fibers in respect to the horizontal direction of the fabric. The highest HI is 1, where all the fibers run parallel to the horizontal direction of the fabric and the lowest HI is 0, where all the fibers run perpendicular to the horizontal direction of the fabric. JP 07-252740A discloses that the major axis of the single yarn should be placed parallel to the flat surface (or horizontal direction) of the fabric to decrease the gaps in the woven fabric, thus suppressing air permeability, or to produce a set air permeability from a lighter fabric, when compared to a fabric made from round fiber (page 10, paragraph 18). Thus, JP 07-252740A teaches that to maximize the advantage gained by using flattened fibers, one must make the fibers parallel or as close to parallel as possible. Therefore, it would have been obvious to one having ordinary skill in the art to optimize the HI of the fabric taught by JP 07-252740A to have a HI of greater than 0.75 to increase the air permeability of the fabric made from flattened fibers to the greatest extent or to decrease the overall weight, as well as thickness, of the fabric to the greatest extent. Thus, claim 3 is rejected. Claims 2 and 11 – 14, which depend on claim 3, are rejected for the reasons set forth above.

Claims 7 – 9 which are drawn to a yarn structure made from flattened fibers, are also rejected. The yarns would have the claimed HI for the reasons set forth above. In addition, it is noted that since the applicant is claiming the yarn and not the fabric, the alignment of the fibers in the finished fabric is not a positive limitation to the yarn by itself. However, this limitation would require that the yarns are mostly running in approximately the same alignment. Since JP 07-252740A teaches the fibers should be parallel to the fabric it would have been obvious to one of ordinary skill in the to produce a yarn wherein the major axis of the fibers run approximately

parallel to each other. The additional features in claims 7 – 9 have been addressed in the previous rejection of these claims. Thus, claims 7 – 9 are also rejected.

7. Claims 2, 3, and 11 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fastenau et al. (6,037,047).

The features of Fastenau et al. have been set forth in section 9 of the Office Action mailed on June 17, 2004. Fastenau et al. discloses yarns made from fibers which position themselves in a tile arrangement as shown in Figure 4. While the fibers aren't completely parallel to each other, the fibers are generally aligned in a parallel manner. Further, Fastenau et al, teaches that the preferred tile arrangement produces a more dense yarn and provides a greater covering power than round yarns (column 5, lines 35 – 50). Therefore, it would have been obvious to one having ordinary skill in the art to produce a yarn with a HI of greater than 0.75 in the yarn taught by Fastenau et al. since the yarn would be more dense and have a greater covering power. The additional features in claims 2, 3, and 11 – 14 were addressed in the previous rejection. Thus, the claims are rejected over Fastenau et al.

8. Claims 1 – 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fastenau et al. (6,147,017).

Fastenau et al. discloses a woven fabric for use in air bags made from fibers having a flattened cross section as shown in Figure 2 (abstract). As shown in the figure, the thickness of the fiber is substantially constant with rounded edges. The fiber has an aspect ratio of 2 – 6 (column 3, lines 47 – 48). Since the thickness is approximately constant along the length of the fiber, then the degree of surface smoothness would be about 1. The fibers can be made from polyamide polymer with a relative viscosity of 24 to 42 (column 4, lines 1 – 37). The filaments have a denier of 4 to 8 (column 4, lines 38 – 40). The yarn contains 140 to 192 fibers having a

total denier of 616 to 1700 (column 4, lines 60 – 62). Fastenau et al. discloses that these yarns can be woven into fabrics made with any conventional design (column 6, lines 2 – 5). These woven fabrics can be used as airbag fabrics (column 8, lines 12 – 13).

While Fastenau et al. fails to teach the cover factor produced in the woven fabrics, Fastenau et al. teaches that the woven fabric is produced using conventional designs and the fabric is used as an airbag, as well as the fact that fabrics produced from the shaped fibers have improved covering power (column 5, lines 40 – 55). Further, it is well known in the airbag art that the permeability of the fabric must be controlled so that the airbag will expand at the desired rate. Therefore, it would have been obvious to one of ordinary skill in the art to choose a known weave pattern used in airbag fabrics and optimize the fabric's cover factor to control the air permeability of the fabric.

Although Fastenau et al. does not explicitly teach the limitations air permeability, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. fiber shape and size, yarn structure) and in the similar production steps (i.e. weaving the yarns together) used to produce the airbag fabric. The burden is upon the Applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594. In the alternative, it would have been obvious for one having ordinary skill in the art to optimize the air permeability to control the rate at which the airbag would expand during use. Thus, claims 1, 2, 6, 10, 13, and 14 are rejected.

Further, Fastenau et al. discloses that the yarns have should be intermingled through an intermingling device (column 4, lines 60 – 65), but fail to teach the number of entanglements per meter. However, Fastenau et al. discloses that the yarns have a greater covering power when the fibers spread out and run parallel to each other. Thus, it would have been obvious to one having

ordinary skill in the art to optimize the number of entanglements in the yarn so that the yarn has sufficient strength and stability properties, while the individual filaments are allowed to spread apart from each other and produce a high covering power. Thus, claims 4 and 11 are rejected.

Fastenau et al. fails to explicitly state the amount of residual oil on the yarns in the woven fabric it is well known in the textile art that some amount of finish or oil is applied to the yarns for processing to prevent snags, breaks, and entanglements from being produced during fabric formation. This finish is usually removed after the fabric has been produced so that the finish doesn't interfere with any further chemical treatments or leave the fabric feeling greasy or slick. Since Fastenau et al. fails to mention the amount of finish on the woven airbag fabric it would have been obvious to one of ordinary skill in the art to remove any finish or oil so that there is at most 0.1% by weight so that the finish does not interfere with any other chemical treatments applied to the fabric and the finished fabric isn't overly slick or greasy. Further, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the claimed amount of oil residue, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). Without a teaching from Fastenau et al. to have a high residual oil content on the finished fabric one of ordinary skill in the art would remove the finish or oil applied for processing from the finished product. Therefore, claims 5 and 12 are also rejected.

Additionally, Fastenau et al. discloses that the fibers in yarns have a tendency to arrange themselves parallel to each other as shown in Figures 2, 3, and 5 (column 5, lines 10 – 35). Further, Fastenau et al. discloses that the arrangement shown in Figure 2 and 3 have greater covering power so that the fibers cover a larger area than the same number of round fibers

(column 5, lines 45 – 55). Thus, it would have been obvious to one having ordinary skill in the art to maximize the HI so that the fabric made from the yarns will have the highest covering power possible while minimizing the weight and thickness of the fabric. Therefore, claims 3 and 7 are rejected. Further, claims 2, 8, 9, and 11 – 14, which depend from claims 3 or 7 are also rejected.

Response to Arguments

9. Applicant's arguments filed may 17, 2005 have been fully considered but they are not persuasive. The applicant argues that it would not have been obvious to one of ordinary skill in the art to optimize the air permeability under high pressure because the prior art did not recognize the air permeability to be a result effective barrier and there were a multiplicity of variables which have some effect on the air permeability (response, pages 10 – 11). First, while JP 07-252740A did not measure the air permeability by the exact same test procedures used by the applicant, JP 07-252740A did discuss the importance of air permeability and the importance of cover factor with respect to air bag produced from the woven fabric. In fact JP 07-252740A notes that the airbag fabric should have low permeability so that the bag expands smoothly at the time of impact (paragraph 4) and to produce a fabric with low air permeability without a coating the fabric must be woven with a high density (paragraph 6). Hence, JP 07-252740A recognizes the importance of air permeability, however one chooses to measure it, and that air permeability is related to the weave structure. Further, JP 07-252740A also acknowledges that the flat fibers have an effect on the air permeability of the fabric since a where two fabrics have the same weight, the fabric made from the flat yarns and not the round yarns will have the higher air permeability (paragraph 18). Also, where two fabrics have the same air permeability, the fabric with the flat yarns will be lower in weight, thinner, and more flexible (paragraph 18). Therefore,

one of ordinary skill would recognize the importance of air permeability and the relationship of air permeability and the weave structure, which is used to determine the cover factor. Further, the relationship between the weave density or the cover factor and the air permeability is a simple indirect relationship. In other words, as the cover factor increases, the air permeability decreases and as the weave density increases, the air permeability decreases. Thus, the relationship between the different variables is relatively simple and easy to predict. Therefore, in situations where a lower air permeability is desired then the weave density or cover factor need to be increased. This is true regardless of what test is used to measure the air permeability. Therefore, it is within the ordinary skill of the art to recognize the importance of air permeability and optimize the air permeability by changing the weave structure or cover factor.

Further, the applicant argues that JP 7-252740A fails to teach aligning the fibers so that the major axis is parallel to the horizontal direction of the fabric (response, page 11). However, as set froth above, JP 07-252740A does recognize the importance of having the fibers running parallel to the horizontal direction of the fabric with respect to the cover factor and air permeability of the fabric. This teaching is sufficient to motivate one of skill in the art to maximize the HI in the woven fabric. Further, the fact that tension is applied is not given weight in the product claims since it is a method limitation. The patentability of a product is based on the structure of the finished product itself and not on how the product was produced. In this case, the prior art addresses the desire to have the yarns lying parallel to the horizontal direction of the fabric. Thus, it would have been obvious to one of ordinary skill to form the yarns so that the fibers lie parallel to each other and then form the woven fabric such that the fibers lie parallel to the horizontal direction of the fabric. Hence, the fabric would have the same final product, as the product claimed by the applicant. Therefore, rejection is maintained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jenna-Leigh Befumo whose telephone number is (571) 272-1472. The examiner can normally be reached on Monday - Friday (8:00 - 5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jenna-Leigh Befumo
August 5, 2005

CHERYL A. JUSKA
PRIMARY EXAMINER